

REMARKS

Applicants respectfully request reconsideration and allowance of the application. Applicants also respectfully request entry of the February 26, 2007 Reply After Final to obviate the double patenting rejection and the objections to the specification. The pending claims are believed to be patentable over the cited references for at least the following reasons.

A. The Cited References Fail to Teach or Suggest All of the Claimed Features

1. Independent claims 22 and 33 recite several features that are neither taught nor suggested by the cited references, either alone or in combination. First, claims 22 and 33 each recite a COB-mounted IC as part of the electronic circuit contained within the electronic die. Specifically, claim 22 recites:

“an electronic circuit, located within the cube-shaped shell . . . including an integrated circuit (IC) for illuminating one or more light emitting diodes (LEDs) illuminating the at least nineteen light-emitting pips according to the predetermined pattern, the IC being circuit-on-board (COB) mounted to a printed circuit board (PCB)” (Emphasis added).

And claim 33 recites:

“an electronic circuit, located within the shell . . . including an integrated circuit (IC) for illuminating the at least one light source according to the predetermined pattern, the IC being circuit-on-board (COB) mounted to a printed circuit board (PCB)” (Emphasis added).

In no instance do the cited references teach or suggest an electronic circuit within an electronic die that includes an “IC being circuit-on-board (COB) mounted to a printed circuit board (PCB)”. Circuit-on-board (aka chip-on-board) mounting techniques allow bare IC chips to be mounted directly on a PCB, which eliminates conventional IC packages and dramatically reduces PCB size. COB mounting is when one or more bare IC chips are mounted directly on a PCB, which eliminates conventional IC packages.

This is the commonly understood meaning of the term “COB”. Although COB mounting may not change the function of the circuit, it is an entirely different circuit assembly structure than what is taught by the cited references. It is a substantial advance for electronic dice because it allows the circuit board to be much smaller, and thus, the dice themselves to be smaller. None of the cited references teaches or suggests an electronic die including a COB-mounted IC. For at least this reason, claims 22 and 33, as well as claims 23 – 32 and 34 - 41 by their respective dependency, are patentable over the cited references.

2. Claims 22 and 33 each recite an electronic circuit that illuminates the die pips in a predetermined pattern. The word “predetermined” means: determined, decided, or established in advance. See American Heritage Dictionary, 4th Ed. Thus, the claimed “predetermined pattern” means an illumination pattern that is established in advance of its display. The cited references entirely fail to teach or suggest this claimed feature. The Examiner has acknowledged that Solow is silent as to this feature, but states that Larson teaches the feature. Applicants respectfully disagree with this conclusion. Larson does not teach or suggest a predetermined illumination pattern. In sharp contrast to claims 22 and 33, Larson teaches a random illumination display pattern. Larson’s die displays a random sequence of numbers on its side while it is being rolled, and then freezes that last displayed random number when the rolling stops. See Larson col. 4, line 7 – col. 6, line 27. The LEDs in the seven segment displays of Larson do not illuminate in a predetermined pattern. Instead, the segments light up in a random pattern. Further, Larson totally eschews any sort of predetermined patterned display. The reference teaches:

“It should be noted that number generator 46 produces a sequence of numbers in such rapid manner that the effect produced is the same as that of a random number generator. Because the one to six count is so rapid relative to the operation of the motion switch, the number displayed is, in essence, random and for all practical purposes independent of the playing die motion. It will be apparent, therefore, that a random number circuit may be substituted for number generator 46 without departing from the scope of the present invention.” Larson at col. 5, line 66 – col. 6, line 7.

As observed from the above, Larson plainly does not teach or suggest the predetermined

pattern claimed by Applicants. If anything, Larson suggests that exact opposite of what is claimed: a random pattern. For at least the foregoing reasons, claims 22 and 33, as well as claims 23 – 32 and 34 - 41 by their respective dependency, are patentable over the cited references.

3. Claims 22 and 33 each recite an electronic circuit that illuminates the die pips for a “predetermined duration”. Applying the same dictionary definition given above for “predetermined”, the claimed “predetermined duration” means a period of time that is established in advance. The cited references entirely fail to teach or suggest this claimed feature. The Examiner has acknowledged that Solow is silent as to this feature, but states that Larson teaches the feature. Applicants respectfully disagree with this conclusion. Larson does not teach or suggest a predetermined display duration. In sharp contrast to claims 22 and 33, Larson teaches a display duration that depends on that amount of time that Larson’s die is in motion. See Larson col. 4, lines 8 – 39. The amount of time that Larson’s die is in motion is not known in advance, and thus, the display duration is not predetermined. It depends on how long someone rolls or shakes the die. This is not a predetermined value. Furthermore, nothing in the cited references teaches or suggests that this is a known value. Thus, if Larson suggests anything, it is an unknown, random duration, which is the opposite of what is claimed. For at least these additional reasons, claims 22 and 33, as well as claims 23 – 32 and 34 - 41 by their respective dependency, are patentable over the cited references.

4. Certain dependent claims also recite additional subject matter that is not taught or suggested by the cited references. Dependent claims 24 and 34 recite “wherein the shell is transparent and the electronic die further comprises an opaque layer of material disposed on the transparent shell in a predetermined pattern defining the light-emitting pips.” The Office Action states that these features are taught by Solow at figure 2 and col. 3, lines 23 – 28. Office Action at page 5. Applicants respectfully disagree. Paraphrasing Solow, Solow teaches that the light-up “dots can be non-opaque integral parts of the material of the otherwise opaque die faces.” Solow, col. 3, lines 24 - 25. This plainly does not teach or suggest the structure recited in claims 24 and 34, which

requires transparent die faces covered, in part, by an opaque layer that defines the light-up dots. For at least these additional reasons, claims 24 and 34 are patentable over the cited references.

Dependent claim 25 recites “wherein the at least one battery is a coin cell battery.” This feature is not taught or suggested by the cited references and provides significant advantage because it allows further miniaturization of the electronic die. Thus, claim 25 is patentable over the cited references for at least this additional reason.

B. The Suggested Modifications Destroy the Intended Purpose of Solow

A proposed modification to a prior art device is not obvious if the modification makes the device inoperative for its intended purpose. MPEP 2143.01; *In re Gordon*, 773 F.2d 900 (Fed. Cir. 1984). In the Office Action, the Examiner proposes adding Larson’s internal electronic circuit, sensor and battery to Solow’s dice to arrive at Applicants’ claimed electronic die. Applicants’ respectful submit that such a modification does not meet the standards of obviousness because modifying Solow’s dice as proposed would plainly defeat the intended purpose of Solow’s dice.

Solow’s dice are novelty items for display purposes only, not for playing games. See Solow, abstract. They are of the same genre as the classic fuzzy dice that hang from car rearview mirrors. Solow, col. 1, lines 58 – 63.

In sharp contrast to Applicants’ die, Solow’s dice are designed to be exclusively powered by an external power source, not an internal source such as a battery. In particular, Solow states: “Instead of having an internal battery which is expensive and hard to replace, the illumination of the (sic) dots of the present invention is actuated by an external power source such as a cord connected to a jack for plugging into a cigarette lighter.” Solow, col. 1, line 67 – col. 2, line 4. Indeed, an essential element of Solow’s claimed invention is a “conductor means for electrically connecting said light sources to an external power source.” See Solow, col. 4, lines 2 – 3, 29 – 30 and col. 5, lines 4 – 5. Furthermore, Solow’s dice are designed to hang from their conductor wires on display. Solow, col. 2, lines 54 - 65.

Replacing Solow’s external power cord with batteries, as proposed by the Examiner, would destroy the ability to display Solow’s dice by hanging them from their

power cords and would also defeat Solow's intent of powering the dice with an external source. Plainly, this would ruin the central purpose of Solow's dice and teachings. Thus, the proposed modification is improper under the MPEP guidelines and does not satisfy the legal test for obviousness. Therefore, claims 22 – 41 are patentable over the cited references for at least this reason.

C. The Rationale for Making the Proposed Modification Is Not Reasonable

An examiner must present a convincing line of reasoning in support of combining two or more references to make a Section 103 rejection. MPEP 2144; *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985). in this case, the Office Action states that the combination of Solow and Larson is desirable "to provide some level of amusement and interest when rolling the die in a new and exciting manner." Office Action at page 6. Applicants' respectfully submit that Solow's dice are not designed or intended to be rolled, nor would one of ordinary skill ever expect them to be rolled in the sense that gaming dice are rolled. They are for display purposes only. They have cords hanging from them. Thus, the above-quoted suggestion to combine the teachings of Solow and Larson is not convincing or reasonable, and therefore, *prima facie* obviousness has not been established. For at least this reason, claims 22 – 41 are patentable over the cited references.

CONCLUSION

Each of the pending claims in the application is in condition for allowance and early notice to this effect is earnestly solicited. If, for any reason, the Examiner is unable to allow the application and feels that a telephone conference would be helpful to resolve any issues, the Examiner is respectfully requested to contact the undersigned Applicant at 520-760-8268.

Respectfully submitted,

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